In the Claims:

1. (Original) A method for inferring a requested sequential cell from a candidate cell during the generation of a netlist; comprising the steps of:

a) representing the requested cell as a mathematical expression;

b) representing the candidate cell as a mathematical expression;

c) performing an operation on the requested cell representation with the candidate cell representation to return at least one value;

d) providing a rule corresponding to each returned value; and

e) transforming the candidate cell into the requested cell by performing each rule corresponding to each returned value;

wherein the operation performed comprises dividing the polynomial representation of the candidate cell with the polynomial representation of the requested cell.

2. (Original) The method of claim 1, wherein the mathematical representations of the candidate cell and the requested cell are polynoms.

3. (Cancel)

4. (Currently Amended) The method of claim [[3]] 1, wherein the polynoms comprise one or more multinoms corresponding to logical elements.

5. (Original) The method of claim 4, wherein the multinoms are selected from the group consisting of Rst, Lr, St, Ls, Sc, Mu, Re, Lre and T.

6. (Currently Amended) The method of claim [[3]] 1, wherein the step of dividing the polynomial representations returns at least one multinom corresponding to necessary inhibitions, transformations and inferences.

7. (Original) The method of claim 1, wherein the steps are implemented by a computer.

8. (Original) A method for inferring a requested sequential cell from a candidate cell during the generation of a netlist; comprising the steps of

a) representing the requested cell as a Preq polynom having a multinom of smallest degree;

b) representing the candidate cell as a Pcand polynom;

c) if neither Preq nor Pcand equals zero, setting a multinom Zreq equal to the multinom of smallest degree of Preq, and if either Preq or Pcand equals zero, performing step f);

d) determining whether Pcand comprises multinoms divisible by Zreq and if so, setting Zcand equal to the smallest degree multinoms of Pcand divisible by Zreq, otherwise setting a polynom Pinhib equal to Pcand, then setting Pcand equal to zero and performing step c);

e) adding to Pinhib multinoms of Pcand having smaller degree than Zcand, subtracting Zcand from Pcand, subtracting Zreq from Preq, adding the polynom quotient of Zcand divided by Zreq to a polynom Ptransform, and then performing step c); and

f) if Preq equals zero, then adding Pcand to Pinhib and if Pcand equals zero, then adding Preq to a polynom Pinfer.

9. (Original) The method of claim 8, wherein the polynoms Pinhib, Ptransfer and Pinfer comprise multinoms, further comprising the steps of providing rules corresponding the multinoms of Pinhib, Ptransfer and Pinfer and applying the rules to the candidate cell to transform the candidate cell into the requested cell.

10. (Original) The method of claim 9, wherein the polynoms Pcand and Preq and the multinoms Zcand and Zreq comprise major and minor multinoms and

step d) further comprises determining whether any major multinoms present in Zreq are also present in Pcand.

11. (Original) The method of claim 10, wherein the multinoms Zreq and Zcand have a degree and the polynom quotient is obtained by setting the degree of Zreq and Zcand to 1 and then dividing Zcand with Zreq.

12. (Original) The method of claim 8, wherein the steps are performed by a computer.

13. (Original) The method of claim 8, wherein requested cell comprises a flip-flop having a first synchronous function element in a first position and the step of representing a requested cell by a Preq polynom comprises setting Preq equal to a multinom corresponding to the first element and giving the multinom a degree of one.

14. (Original) The method of claim 13, wherein the requested cell comprises a second function element in a position and the step of representing a requested cell by a Preq polynom comprises summing the multinom corresponding to the first element with a multinom corresponding to the second element, wherein the second element multinom has a degree corresponding to the second element position.

15. (Amended) A system for inferring a requested sequential cell from a candidate cell during the generation of a netlist; the system comprising:

a) means for representing the requested cell as a mathematical expression;

b) means for representing the candidate cell as a mathematical expression;

c) means for performing an operation on the requested cell representation with the candidate cell representation to return at least one value;

d) means for providing a rule corresponding to each returned value; and

e) means for transforming the candidate cell into the requested cell by performing each rule corresponding to each returned value;

wherein the operation performed comprises dividing the polynomial representation of the candidate cell with the polynomial representation of the requested cell.

16. (Original) The system of claim 15, wherein the mathematical representations of the candidate cell and the requested cell are polynoms.

17. (Cancel)

18. (Currently Amended) The system of claim ~~17~~ 15, wherein the polynoms comprise one or more multinoms corresponding to logical elements.

19. (Original) The system of claim 18, wherein the multinoms are selected from the group consisting of Rst, Lr, St, Ls, Sc, Mu, Re, Lre and T.

20. (Currently Amended) The system of claim ~~17~~ 16, wherein the means for dividing the polynomial representations returns at least one multinom corresponding to necessary inhibitions, transformations and inferences.

21. (Original) The system of claim 15, wherein the means are implemented by a computer.

22. (Original) A system for inferring a requested sequential cell from a candidate cell during the generation of a netlist; comprising:

a) means for representing the requested cell as a Preq polynom having a multinom of smallest degree;

b) means for representing the candidate cell as a Pcand polynom;

c) means for setting, if neither Preq nor Pcand equals zero, a multinom Zreq equal to the multinom of smallest degree of Preq, and if either Preq or Pcand equals zero, initiating the function of f);

d) means for determining whether Pcand comprises multinoms divisible by Zreq and if so, setting Zcand equal to the smallest degree multinoms of Pcand divisible by Zreq, otherwise setting a polynom Pinhib equal to Pcand, then setting Pcand equal to zero and performing step c);

e) means for adding to Pinhib multinoms of Pcand having smaller degree than Zcand, subtracting Zcand from Pcand, subtracting Zreq from Preq, adding the polynom quotient of Zcand divided by Zreq to a polynom Ptransform, and then initiating the function of means c); and

f) means for adding, if Preq equals zero, Pcand to Pinhib and if Pcand equals zero, then adding Preq to a polynom Pinfer.

23. (Original) The system of claim 22, wherein the polynoms Pinhib, Ptransfer and Pinfer comprise multinoms, further comprising means for providing rules corresponding the multinoms of Pinhib, Ptransfer and Pinfer and applying the rules to the candidate cell to transform the candidate cell into the requested cell.

24. (Original) The system of claim 23, wherein the polynoms Pcand and Preq and the multinoms Zcand and Zreq comprise major and minor multinoms and means d) further comprises means for determining whether any major multinoms present in Zreq are also present in Pcand.

25. (Original) The system of claim 24, wherein the multinoms Zreq and Zcand have a degree and the polynom quotient is obtained by setting the degree of Zreq and Zcand to 1 and then dividing Zcand with Zreq.

26. (Original) The system of claim 22, wherein the means are implemented by a computer.

27. (Original) The system of claim 22, wherein the requested cell comprises a flip-flop having a first synchronous function element in a first position and the means for representing a requested cell by a Preq polynom comprises means for setting Preq equal to a multinom corresponding to the first element and giving the multinom a degree of one.

28. (Original) The system of claim 27, wherein the requested cell comprises a second function element in a position and the means for representing a requested cell by a Preq polynom comprises means for summing the multinom corresponding to the first element with a multinom corresponding to the second element, wherein the second element multinom has a degree corresponding to the second element position.

29. (Original) The method according to Claim 1, wherein:

said method is embodied in a set of computer instructions stored on a computer readable media; and

said computer instructions, when loaded into a computer, cause the computer to perform the steps of said method.

30. (Original) The system according to Claim 15, wherein each of said means comprise software components.